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B-2024

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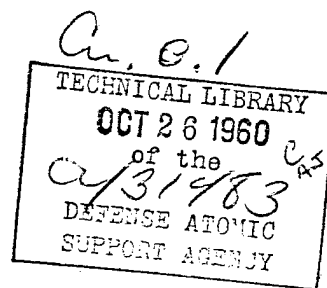
EDGERTON, GERMESHAUSEN & GRIER, INC.

FIREBALL CALCULATIONS
SHOT SANFORD
OPERATION HARDTACK PHASE II
PROJECT 15.1

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REPORT NO. B-2024
29 JANUARY 1960

BOSTON, MASSACHUSETTS • LAS VEGAS, NEVADA
SANTA BARBARA, CALIFORNIA



Defense Nuclear Agency
6801 Telegraph Road
Alexandria, Virginia 22310-3398



ISST

29 May 1996

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ATTENTION: OCD/Mr. Bill Bush

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EGG-B-2024 (29 January 1960)
Fireball Calculations Shot Sanford
Operation Hardtack Phase II
Project 15.1

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Operation Hardtack Phase II
Project 15.1

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FIREBALL CALCULATIONS
SHOT SANFORD
OPERATION HARDTACK, PHASE II
PROJECT 15.1

Report No. B-2024
29 January 1960

Prepared by

J. E. Campbell
J. E. Campbell

Approved by

D. F. Seacord, Jr.
D. F. Seacord, Jr.

EDGERTON, GERMESHAUSEN & GRIER, INC.
Boston, Mass. Santa Barbara, Calif. Las Vegas, Nev.

FIREBALL CALCULATIONS: SHOT SANFORD

1.0 INTRODUCTION

Sanford, an LRL event, was detonated on 26 October, 1958, at approximately 0220, PST, from a 1500-foot balloon in Area B-Fa of the Nevada Test Site. The fireball yield was $4.89 \text{ kt} \pm 0.30 \text{ kt}$.

2.0 CAMERA INSTRUMENTATION AND OPERATION (Table I)

Photographic coverage of fireball growth was provided by four-high-speed Eastman cameras, two each at Stations F-362 (6 x 6 No. 2) and F-369 (6 x 6 No. 3). In addition, Rapatronic cameras were located at each of these stations to record early fireball phenomena. All cameras functioned properly and provided records suitable for analysis.

The station and burst locations are shown in Fig. 1. Figure 2 contains the survey data.

3.0 RESULTS

Application of \emptyset scaling to the Sanford data indicates a yield of $4.89 \text{ kt} \pm 0.30 \text{ kt}$.

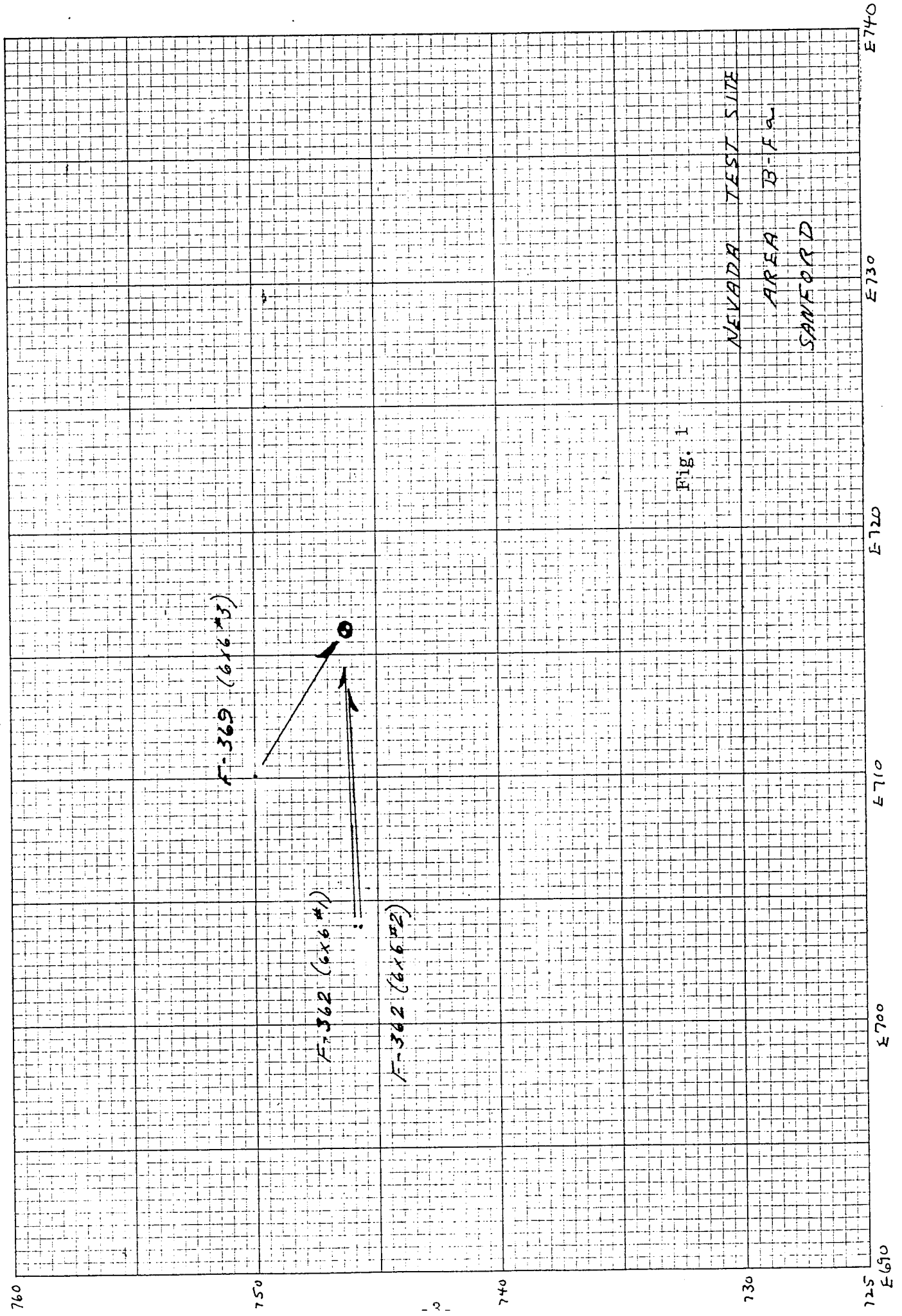
An air density of 1.062 grams per liter was used in the yield calculations. This air density was based on a pressure of 864 millibars, a temperature of 9.4°C , and a relative humidity of 78 percent at the height of the device at shot time. Diameter vs time and phi vs time plots are given in Figs. 3 and 4. Table II shows average diameter vs time.

The zero-frame times of the Eastman cameras were determined by comparison with the Rapatronic diameter vs time data.

The following data sheets are included for each shot:

- (a) Photo Plan and Photo Loading Chart
- (b) Camera Data and Calculation Sheet
- (c) Diameter Measurement Sheet
- (d) E102 print-out sheet of D, t, ϕ and W (yield).

The Appendix contains photographic examples of the Sanford Fireball.



SURVEY DATA

GZ STA: 13 FA

DATE 10/24/58[illegible]

FORM E17(1-55 500)

NAME Early

EDGERTON, GERMESHAUSEN & GRIER INC.

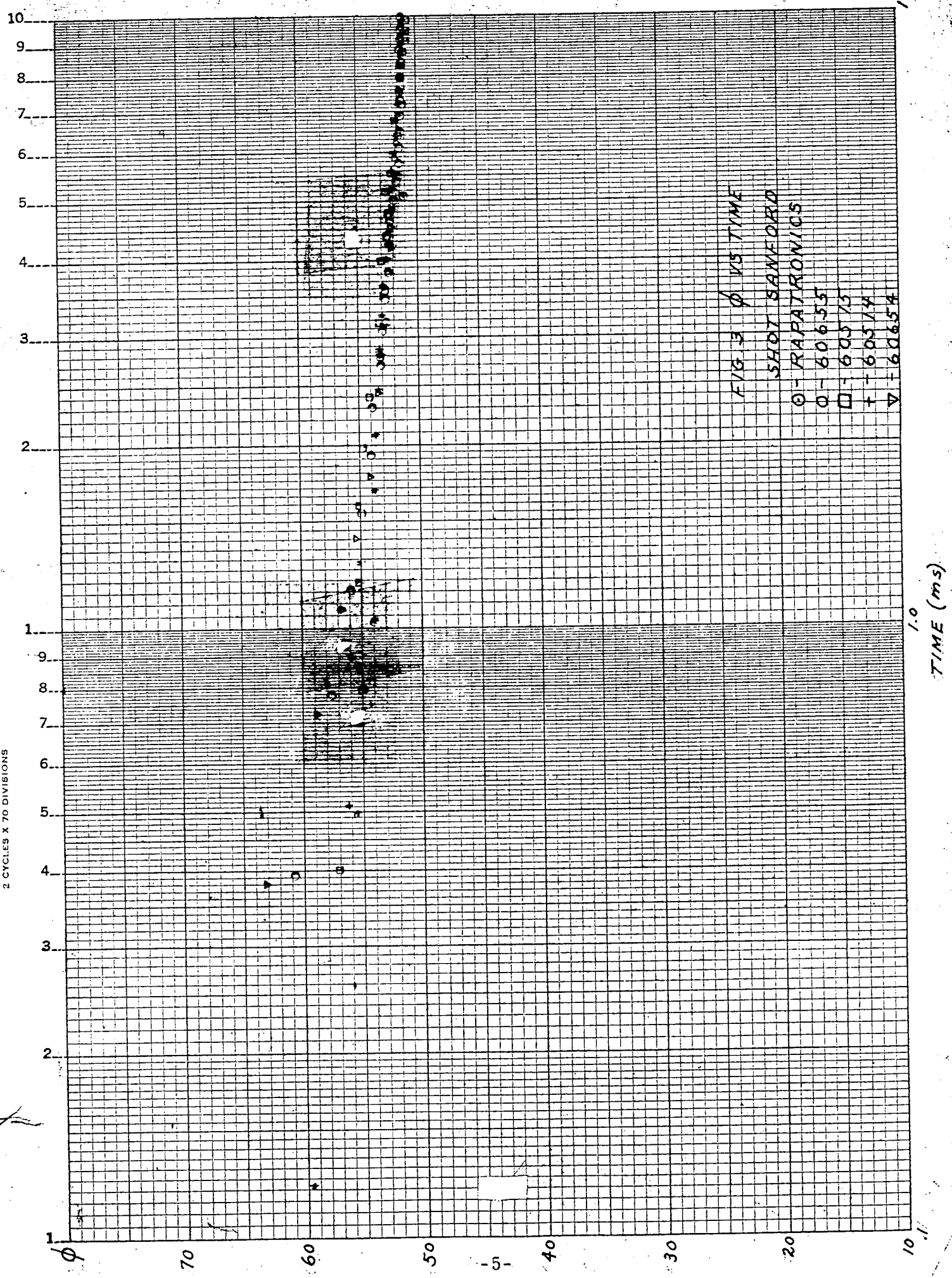


FIG 3 ϕ VS TIME

SHOT SANFORD

0 - RAPATRONICS

0 - 60655

0 - 60575

+ - 60374

v - 60654

TIME (ms)

Fig. 2

SURVEY DATA

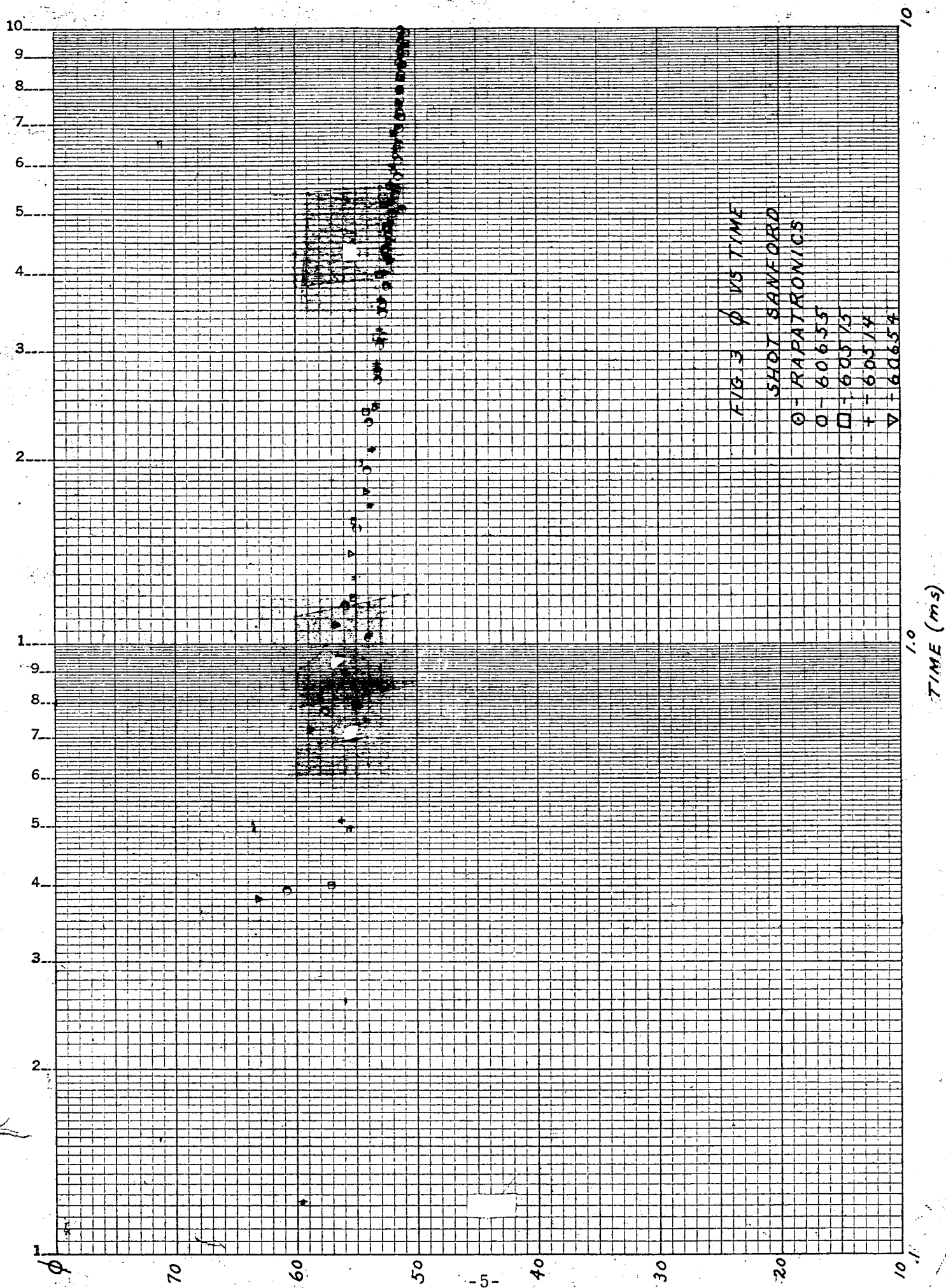
GZ STA: 13FA

DATE 10/24/58[illegible]

FORM E17(1-55 500)

NAME Analysis

EDGERTON, GERMESHAUSEN & GRIER INC.



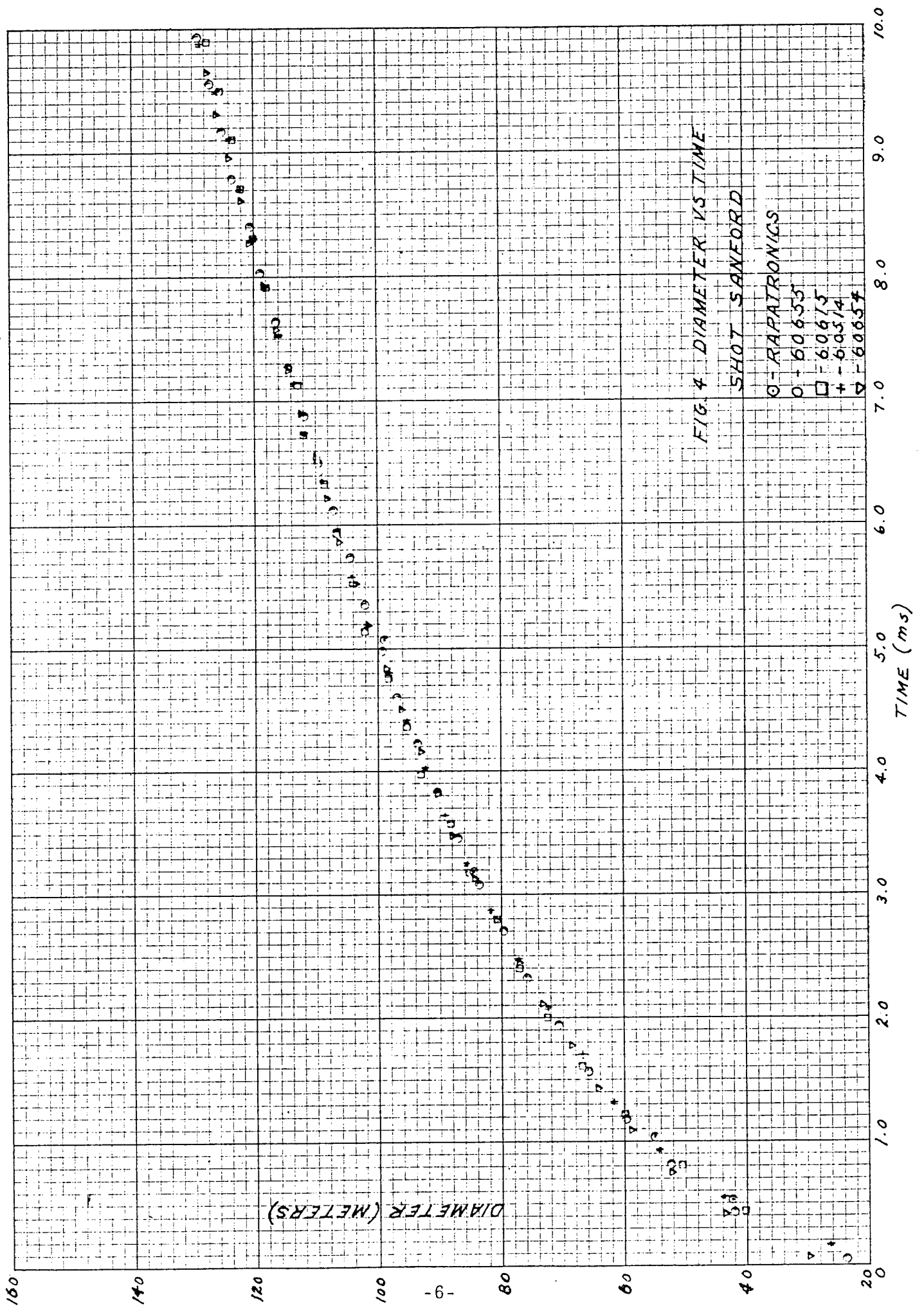


Table I
Hardtack Phase II, Sanford
Fireball Camera Distribution

Station	Camera	Qualitative Functioning
F-362 (6 x 6 No. 2)	E-34	Record
	E-7	Record
	R-30	Record
	R-34	Record
F-369 (6 x 6 No. 3)	E-25	Record
	E-6	Record
	XR-3	Record
	R-4	Record

Table II

Hardtack Phase II, Sanford

Average Diameter vs Time

Time (in msec.)	Diameter (meters) as seen from Stations 7-357 and 9-356
0.5	43.0
1.0	57.0
1.5	65.5
2.0	71.5
2.5	78.5
3.0	83.0
3.5	87.5
4.0	92.0
4.5	96.0
5.0	100.0
5.5	103.5
6.0	106.5
6.5	110.0
7.0	113.0
7.5	116.0

Table II, cont'd

Time (in msec.)	Diameter (meters) as seen from Stations 7-357 and 9-356
8.0	119.0
8.5	121.5
9.0	124.5
9.5	127.0
10.5	129.5

Table III

Hardtack Phase II, Sanford

Rapatronic Summary

Station	Film No.	Camera No.	Range (m)	F. L. (mm)	Diameter (m)	Time (msec)
F-362 (6 x 6 No. 2)	60665	R-30	3704.1	479.30	41.90	0.489
	60666	R-34	3704.1	479.03	84.03	3.182
F-369 (6 x 6 No. 3)	60658	R-4	2196.3	482.35	98.46	5.09
	60657	XR-3	2196.3	476.76	54.57	1.02

09-17

DATE _____

EVENT SANFORD

STATION F 362 6X6 #1

FILM

TYPE	EMULS. NO.
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
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66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

HOLDER

PERF.
NO.

Q.

**NOM.
SPD.**

FIL

APER

**SHUTTER
RHEO.**

W/M 2

REMARKS

DATE EXPOSED

DATE CAMERA LOADED.

DATE FILM LOADED-

REMARKS

FINAL

EDGERTON, GERMESHAUSEN & GRIER, INC.

FORM E-40

DIFF. 406 TILT -0° 4' DATE 10-21-58
12053 GZ OBJ 7° 01' POSTED
1486 1500' BOUNDED

STATION		GZ	
N	745 844	746	250
E	703 948	716	000
Z	3091	4577	

[illegible]

REMARKS
* Includes 1500 ft. height of balloon.

FINAL

STATION TYPE	STATION	GZ	DIFF.	TILT	DATE	POSTED
DISTANCE GZ	N 745 825	746 250	425	-04'	10-21-58	
DISTANCE OBJECT	E 703 946	716 000	12054	OBJ 7702'		
	Z 3070	4527*	1487		1500' BALLBOON	

CAMERA			LENS		FIELD TARGET H/V	AIMING		POWER			MARKER		DELAY	FILM	PUR- POSE	REMARKS
NO.	NOM SPD.	RACK POS.	FOC. MM	S/N		FILTER	OBJECT	-H	V	VOLTS	SHUT RHEO.	TIME ON/OFF				
E-34	2500	C-1	63	ET 1254	ND-1	F.B.	0°	702	120DC	40/80	-1.5/11.5	200	12	MF	15.1	
E-7	2500	C-2	63	RC 486	ND-1	F.B.	0°	702	120DC	40/80	-1.5/11.5	200	4	MF	15.1	
M-26	100	B-2	18.5	304862	W-12	CLOUD	0°	420	120DC	170	-5/130	200	12	TRIX	15.1	
R-30	4ms	A-1	480	723953	ND-1	FR	0°	702	115AC	BULB		FM	5	PP	15.1	CAN # 32
R-34	40ms	A-2	480	773948	ND-1	F.B.	0°	702	24DC	BULB		FM	5	RP	15.1	CAN # 40
22																
GSP	64	B-4	9.5	240190	=	DOC	0°	1515	24DC	133	-5/130	=	=	D	15.1	
5		R			=											
GSP	64	B-4	9.5	240259	=	DOC	0°	1515	24DC	133	-5/130	=	=	D	15.1	
#1						F.B.	0°	702	120DC	=	-3/12	200	4	ECT	15.1	
35FF	2000	C-3	152	90589	ND-3											
						ACTUAL			RAP	DELAYS						
						R-30		486.7	ms	+ 2	ms				half coil delay	
						R-34		311.7	ms	+ 20	ms				half coil delay	

REMARKS * Includes 1500', height of balloon.

FINAC

EDGERTON, GERMESHAUSEN & GRIER, INC.

GZ STA. BFA
DATE 10/24/58
POSTED _____

DATE 0 POSTED 12

REMARKS

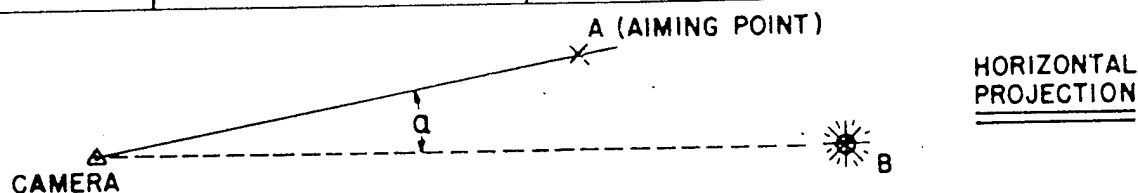
MARKS _____ Includes 1500 ft. height of balloon

Final

EDGERTON, GERMESHAUSEN & GRIER, INC.

OPERATION: HARDTACK PHASE II
CAMERA DATA & CALCULATIONS

FILM NO. 60655	f STOP	CAMERA NO. E-6	CALCULATED BY: JEC
STATION NO. ^{F-369} 6x6 #3	EQ. AP.	LENS TYPE	DATE: 12/1/58
RACK POS.	N D	LENS NO. 3232586	
TEST SANFORD	COLOR FILTER:	β = EL. ANGLE	



A. $R\%_A = CB_h \cos \alpha \cos \beta + (H_B - H_C) \sin \beta$

$\alpha = 0^\circ 00'$	$\beta = 12^\circ$	$H_B = 4577 \text{ ft}$
$\cos \alpha = 1.0000$	$\cos \beta = 0.97815$	$H_C = 3078 \text{ ft}$
$CB_h = 2148.2 \text{ m}$	$\sin \beta = 0.20791$	$\Delta H = 1499 \text{ ft} = 456.9 \text{ m}$
$CB_h \cos \alpha \cos \beta = 2101.3 \text{ m}$	$\Delta H \sin \beta = 94.99 \text{ m}$	$R\%_A = \boxed{2196.3 \text{ m}}$

B. FOCAL LENGTH 39.95 mm (3232586)

C. MAGNIFICATION FACTOR (meters/in.) 1396.5

D. ZERO TIME CORRECTION 0.01 ms

INFORD

6x6 #3

RH

TYPED BY

DATE _____

FIREBALL CALCULATIONS

SHOT SANFORD

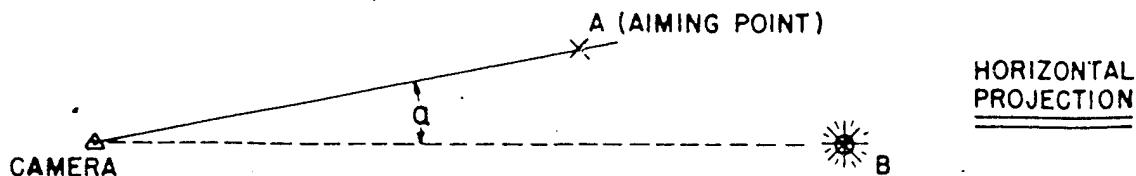
FILM NO. 60655

DATE 11/5/58

D	t	ln D	Int	$t^{2/5}$	ϕ	W
23.35	.01	3.15053	4.60509 -	.159064	146.795	920909
41.76	.39	3.73201	4.4153 -	6.86180	608.58	11278
52.06	.77	3.95238	2.6135 -	9.00735	577.97	3713
59.31	1.15	4.08271	139.68	10.57464	560.86	7498
65.54	1.54	4.18259	431.85	11.88560	551.42	6887
70.33	1.92	4.25315	652.33	12.98144	541.77	6305
75.40	2.30	4.32280	832.84	13.95338	540.37	6224
79.17	2.69	4.37163	989.47	14.85556	532.93	5807
83.23	3.07	4.42167	1121.66	15.66219	531.40	5725
86.71	3.45	4.46265	1238.41	16.41099	528.36	5563
90.05	3.83	4.50044	1342.93	17.11166	526.24	5452
93.38	4.22	4.53673	1439.90	17.78843	524.94	5385
96.57	4.60	4.57027	1526.10	18.41244	524.48	5361
99.04	4.98	4.59547	1605.43	19.00611	521.09	5190
101.47	5.36	4.61980	1678.93	19.57314	518.41	5058
103.89	5.75	4.64332	1749.13	20.13059	516.08	4945
106.55	6.13	4.66856	1813.11	20.65241	515.92	4938
108.96	6.51	4.69091	1873.26	21.15530	515.04	4896
111.38	6.89	4.71287	1930.01	21.64101	514.67	4878
114.04	7.28	4.73647	1985.10	22.12317	515.47	4917
115.97	7.66	4.75325	2036.01	22.57836	513.63	4829
118.63	8.04	4.77594	2084.47	23.02021	515.32	4909
120.32	8.42	4.79009	2130.67	23.44965	513.09	4804
123.22	8.81	4.81392	2175.96	23.87831	516.03	4943
124.91	9.19	4.82755	2218.17	24.28494	514.35	4863
126.84	9.57	4.84288	2258.65	24.68128	513.91	4842
128.77	9.95	4.85801	2297.50	25.06789	513.68	4832
130.71	10.33	4.87297	2335.05	25.44724	513.65	4830
131.91	10.72	4.88212	2372.06	25.82673	510.74	4695
133.36	11.10	4.89306	2406.87	26.18887	509.22	4625

OPERATION: HARDTACK PHASE II
CAMERA DATA & CALCULATIONS

FILM NO. 60514	f STOP	CAMERA NO. E-34	CALCULATED BY
STATION NO. ^{F-362} 6x6 #2	EQ. AP.	LENS TYPE	DATE: 12/1/58
RACK POS.	N D	LENS NO. ET-1254	
TEST SANFORD	COLOR FILTER:	β = EL. ANGLE	



A. $R^0/A = CB_h \cos \alpha \cos \beta + (H_B - H_C) \sin \beta$

$\alpha = 0^\circ 00'$	$\beta = 7^\circ 02'$	$H_B = 4577 \text{ ft}$
$\cos \alpha = 1.0000$	$\cos \beta = 0.99248$	$H_C = 3090 \text{ ft}$
$CB_h = 3676.2 \text{ m}$	$\sin \beta = 0.12245$	$\Delta H = 1487 \text{ ft} = 453.$
$CB_h \cos \alpha \cos \beta = 3648.6 \text{ m}$	$\Delta H \sin \beta = 55.49 \text{ m}$	$R^0/A = \boxed{3704.1 \text{ m}}$

B. FOCAL LENGTH 63.91 mm (ET-1254)

C. MAGNIFICATION FACTOR (meters/in.) 1472.1

D. ZERO TIME CORRECTION 0.12 ms

DIAMETER MEASUREMENTS

SHOT **SANFORD**

FILM NO. E-34 F-362

60514

[illegible]

READ BY _____ GGO JEC TYPED BY _____

DATE 11-5-58 DATE

REMARKS:

FIREBALL CALCULATIONS

SHOT SANFORD

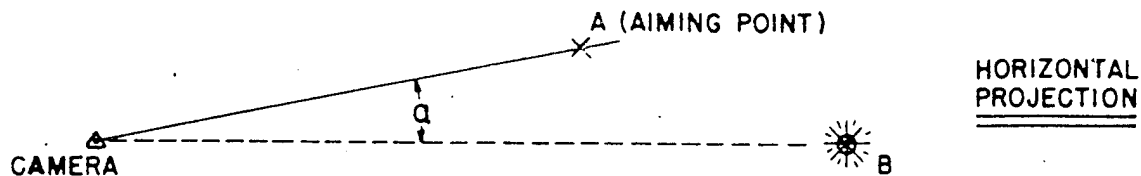
FILM NO. 60514

DATE 11/5/58

D.	t	ln D	Int	$t^{2/5}$	ϕ	W
25.53	.12	3.23978	2.12033	4.28214	50.619	10.176
43.10	.51	3.76359	6.7335	7.63882	56.422	77.25
53.65	.90	3.98245	10.529	9.58758	55.957	74.12
61.14	1.29	4.11309	25.462	11.07218	55.219	69.36
66.34	1.68	4.19472	51.886	12.30654	53.906	61.49
71.84	2.07	4.27440	72.752	13.37776	53.701	60.33
76.58	2.46	4.33834	90.008	14.33377	53.426	58.80
81.01	2.85	4.39462	104.727	15.20300	53.285	58.03
84.98	3.25	4.44249	117.866	16.02343	53.034	56.68
88.65	3.64	4.48477	129.204	16.76684	52.872	55.82
91.86	4.03	4.52033	139.384	17.46366	52.600	54.40
94.77	4.42	4.55149	148.620	18.12089	52.298	52.85
97.82	4.81	4.58311	157.072	18.74402	52.187	52.29
101.03	5.20	4.61546	164.864	19.33743	52.245	52.59
103.63	5.59	4.64082	172.092	19.90471	52.063	51.67
105.93	5.98	4.66274	178.834	20.44880	51.802	50.39
108.25	6.37	4.68438	185.152	20.97211	51.616	49.49
111.30	6.76	4.71215	191.095	21.47668	51.823	50.50
113.09	7.15	4.72810	196.707	21.96420	51.488	48.88
115.38	7.54	4.74815	202.021	22.43611	51.426	48.59
117.67	7.93	4.76781	207.068	22.89363	51.398	48.46
119.45	8.32	4.78283	211.872	23.33779	51.183	47.45
121.75	8.72	4.80191	216.569	23.78043	51.197	47.52
123.78	9.11	4.81846	220.944	24.20020	51.148	47.29
125.82	9.50	4.83491	225.132	24.60902	51.127	47.19
128.37	9.89	4.85489	229.147	25.00748	51.332	48.15
130.66	10.28	4.87259	233.021	25.39800	51.444	48.68

OPERATION: HARDTACK PHASE II
CAMERA DATA & CALCULATIONS

FILM NO. 60515	f STOP	CAMERA NO. E-7	CALCULATED BY: DB
STATION NO. ^{F-362} 6x6 #2	EQ. AP.	LENS TYPE	DATE: 10/26/58
RACK POS.	N D	LENS NO. RC 486	
TEST SANFORD	COLOR FILTER:	β = EL. ANGLE	



A. $R^0_A = CB_h \cos \alpha \cos \beta + (H_B - H_C) \sin \beta$

$\alpha = 0^\circ 00'$	$\beta = +7^\circ 02'$	$H_B = 4577 \text{ ft}$
$\cos \alpha = 1.0000$	$\cos \beta = 0.9925$	$H_C = 3090 \text{ ft}$
$CB_h = 3676.2 \text{ m}$	$\sin \beta = 0.1224$	$\Delta H = 1487 \text{ ft} = 453.2 \text{ m}$
$CB_h \cos \alpha \cos \beta = 3648.6 \text{ m}$	$\Delta H \sin \beta = 55.47 \text{ m}$	$R^0_A = \boxed{3704.1 \text{ m}}$

B. FOCAL LENGTH 63.93 mm (RC 486)

C. MAGNIFICATION FACTOR (meters/in.) 50.73

D. ZERO TIME CORRECTION 0.40 ms

DIAMETER MEASUREMENTS

SHOT Sanford

FILM NO. E-7 F 362
60515

[illegible]

READ BY _____ GGO JEC TYPED BY _____

DATE	10/26/58	DATE
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REMARKS:

**EDGERTON, GERNESHAUSEN
& GRIER, INC.**

FIREBALL CALCULATIONS

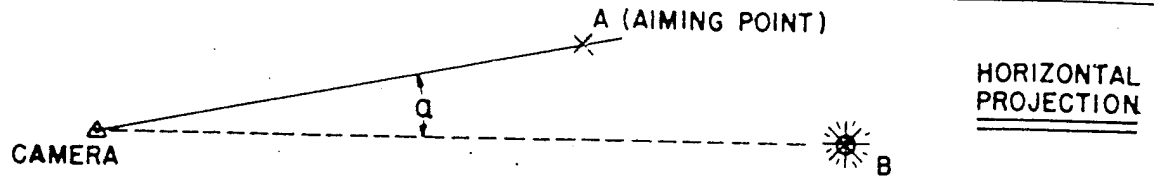
SHOT SANFORD FILM NO. 60515

DATE 10/26/58

D	t	ln D	Int	t ^{2/5}	φ	W
39.58	.40	3.67840	.91451	.507164	571.00	52.00
50.23	.70	3.91642	1.38451	.710028	551.06	69.21
59.77	1.19	4.08372	1.7388	1.072030	553.50	70.38
66.47	1.59	4.19668	463.81	12.03849	552.14	69.33
72.05	1.98	4.27733	683.09	13.14212	548.23	66.91
76.62	2.38	4.33886	867.02	14.14548	541.65	62.99
80.17	2.78	4.38419	1022.39	15.05247	532.60	57.89
84.74	3.17	4.43966	1153.73	15.86440	534.15	53.74
87.73	3.57	4.47491	1272.62	16.63707	527.61	55.23
92.35	3.97	4.52565	1378.84	17.35919	531.99	57.76
94.98	4.36	4.55264	1472.53	18.02213	526.46	54.63
97.23	4.76	4.58423	1560.28	18.66587	524.64	53.70
101.48	5.15	4.61990	1638.98	19.26288	526.81	54.92
103.51	5.55	4.63966	1713.75	19.84764	521.52	52.12
106.05	5.95	4.66327	1783.32	20.40771	519.65	51.19
107.08	6.34	4.68281	1846.80	20.93255	516.32	49.57
111.63	6.74	4.71511	1907.99	21.45123	520.78	51.12
112.64	7.14	4.72411	1965.67	21.95190	513.12	48.05
115.69	7.53	4.75083	2018.88	22.42419	515.91	49.17
117.72	7.93	4.76823	2070.68	22.89363	514.20	48.52
119.75	8.32	4.78534	2118.72	23.33779	513.11	48.05
121.78	8.72	4.80216	2165.69	23.78043	512.10	47.48
123.80	9.11	4.81457	2209.44	24.20020	509.49	46.38
125.83	9.51	4.83091	2252.37	24.61936	509.07	46.18
127.86	9.91	4.84699	2293.49	25.02764	508.87	45.10
129.86	10.30	4.85091	2332.15	25.41771	503.03	43.51
130.91	10.70	4.87450	2370.19	25.80748	507.15	45.37
132.94	11.09	4.88990	2405.27	26.17943	507.50	45.41

OPERATION: HARDTACK PHASE II
CAMERA DATA & CALCULATIONS

FILM NO. <u>60654</u>	f STOP	CAMERA NO. <u>E-25</u>	CALCULATED BY: <u>JEC</u>
STATION NO. <u>F-369</u> <u>6x6 #3</u>	EQ. AP.	LENS TYPE	DATE: <u>12/1/58</u>
RACK POS.	N D	LENS NO. <u>ET-1207</u>	
TEST <u>SANFORD</u>	COLOR FILTER:	β = EL. ANGLE	



A. $R^0_A = CB_h \cos \alpha \cos \beta + (H_B - H_C) \sin \beta$

$\alpha = 0^\circ 00'$	$\beta = 12^\circ$	$H_B = 4577 \text{ ft}$
$\cos \alpha = 1.0000$	$\cos \beta = 0.97815$	$H_C = 3078 \text{ ft}$
$CB_h = 2148.2 \text{ m}$	$\sin \beta = 0.20791$	$\Delta H = 1499 \text{ ft} = 456.9 \text{ m}$
$CB_h \cos \alpha \cos \beta = 2101.3 \text{ m}$	$\Delta H \sin \beta = 94.99 \text{ m}$	$R^0_A = \boxed{2196.3 \text{ m}}$

B. FOCAL LENGTH 64.10 mm. (ET-1207)

C. MAGNIFICATION FACTOR (meters/in.) 870.28

D. ZERO TIME CORRECTION 0.03 ms

DIAMETER MEASUREMENTS

SHOT Sanford

E-25 STA-369
FILM NO. 60654

[illegible]

READ BY ggg rh TYPED BY _____

DATE 11-5-58 DATE _____

REMARKS:

**ED-GERSON, GERMESHAUSEN
& GRIER, INC.**

FIREBALL CALCULATIONS

SHOT SANFORD

FILM NO. 60654

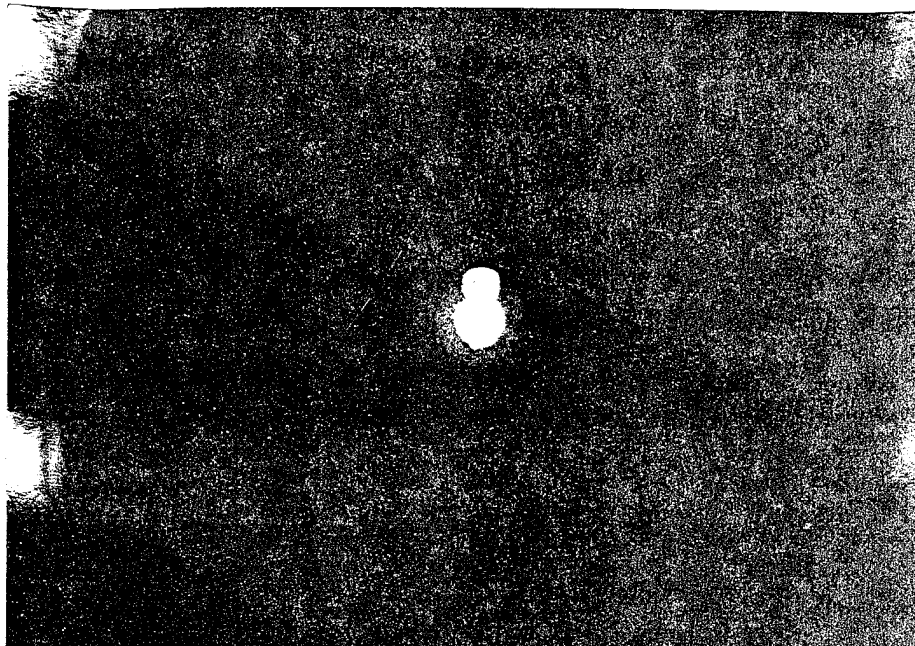
DATE 11/5/58

D	t	ln D	Int	t ^{2/5}	φ	W
29.40	.33	3.36725	3.50656	.245999	117.886	3075.89
43.01	.38	3.26150	967.51	.679086	633.35	137.68
51.77	.72	3.04680	728.54	.876851	590.40	96.92
58.37	1.07	4.06674	67.60	10.27412	568.12	79.96
63.79	1.41	4.15552	343.63	11.47348	555.97	71.76
68.05	1.76	4.22018	565.37	12.53761	542.76	63.63
73.02	2.10	4.29071	741.90	13.45494	542.69	63.59
76.63	2.44	4.33900	891.92	14.28704	536.35	59.97
80.04	2.79	4.38506	1025.98	15.07411	532.30	57.73
83.86	3.13	4.42921	1141.02	15.78399	531.29	57.19
87.47	3.48	4.47137	1247.07	16.46795	531.15	57.11
89.89	3.82	4.49855	1340.32	17.09377	525.80	54.29
92.59	4.16	4.52824	1425.59	17.68684	523.49	53.11
95.75	4.51	4.56176	1506.35	18.26754	524.15	53.45
98.31	4.85	4.58809	1579.00	18.80618	522.75	52.74
100.87	5.20	4.61388	1648.64	19.33743	521.63	52.17
102.93	5.54	4.63454	1711.94	19.83334	519.22	50.98
105.68	5.88	4.66038	1771.48	20.31136	520.29	51.51
107.72	6.23	4.67947	1829.29	20.78651	518.22	50.49
109.53	6.57	4.69613	1882.44	21.23309	515.84	49.34
112.02	6.91	4.71860	1932.91	21.66612	517.02	49.91
114.06	7.26	4.73664	1982.34	22.09883	516.13	49.48
116.09	7.60	4.75429	2028.14	22.50741	515.78	49.31
118.13	7.95	4.77171	2073.20	22.91672	515.47	49.16
120.39	8.29	4.79067	2115.10	23.30408	516.60	49.71
121.75	8.63	4.80101	2155.31	23.68193	514.10	48.51
123.79	8.98	4.81854	2195.07	24.06153	514.47	48.69
125.82	9.32	4.83461	2232.21	24.43186	515.19	49.03
127.41	9.66	4.84738	2267.99	24.77371	514.29	48.60

APPENDIX

SHOT SANFORD

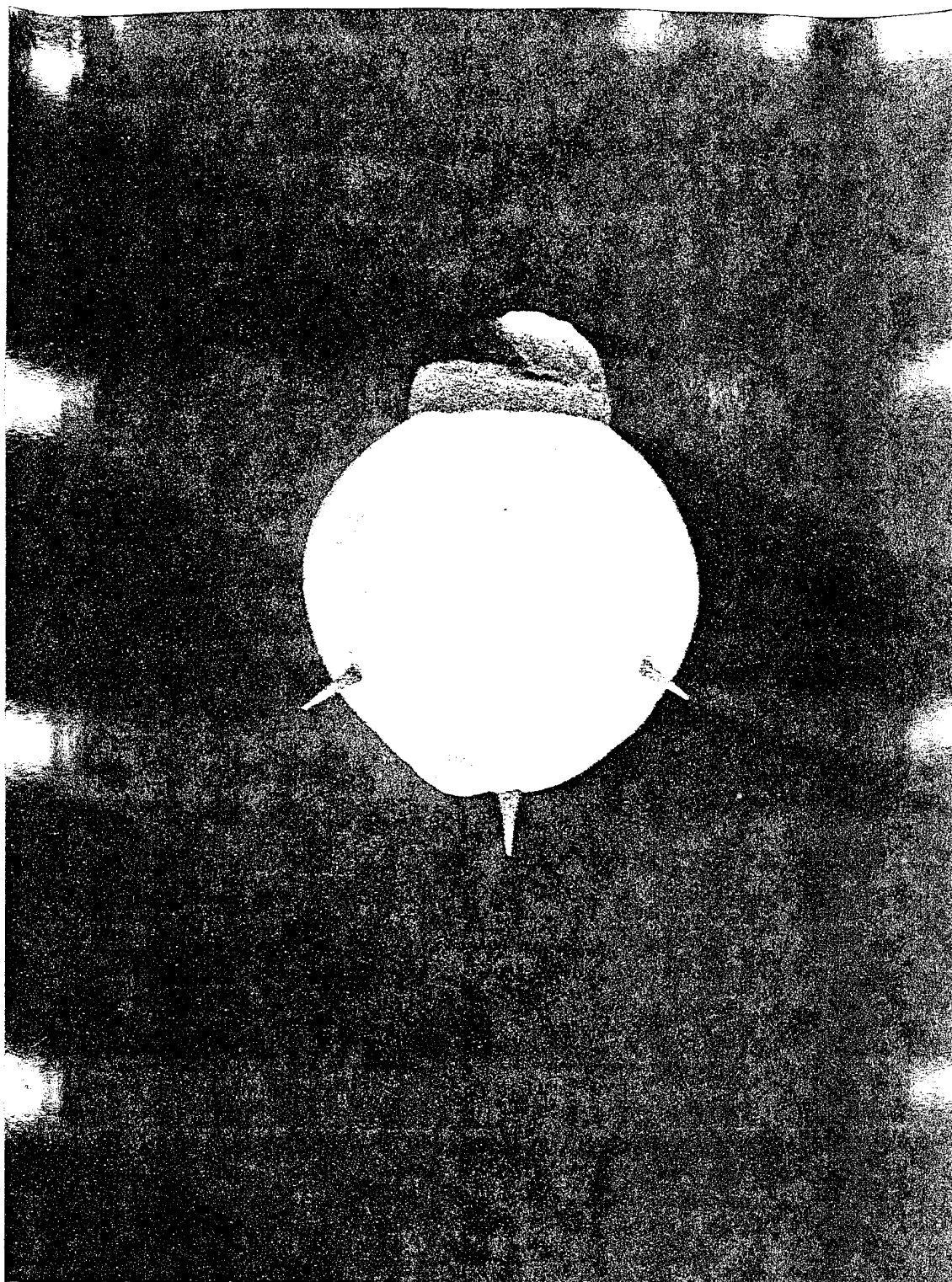
PHOTOGRAPHIC EXAMPLES



Camera: E-34

Station: F-362 (6 x 6 No. 2)

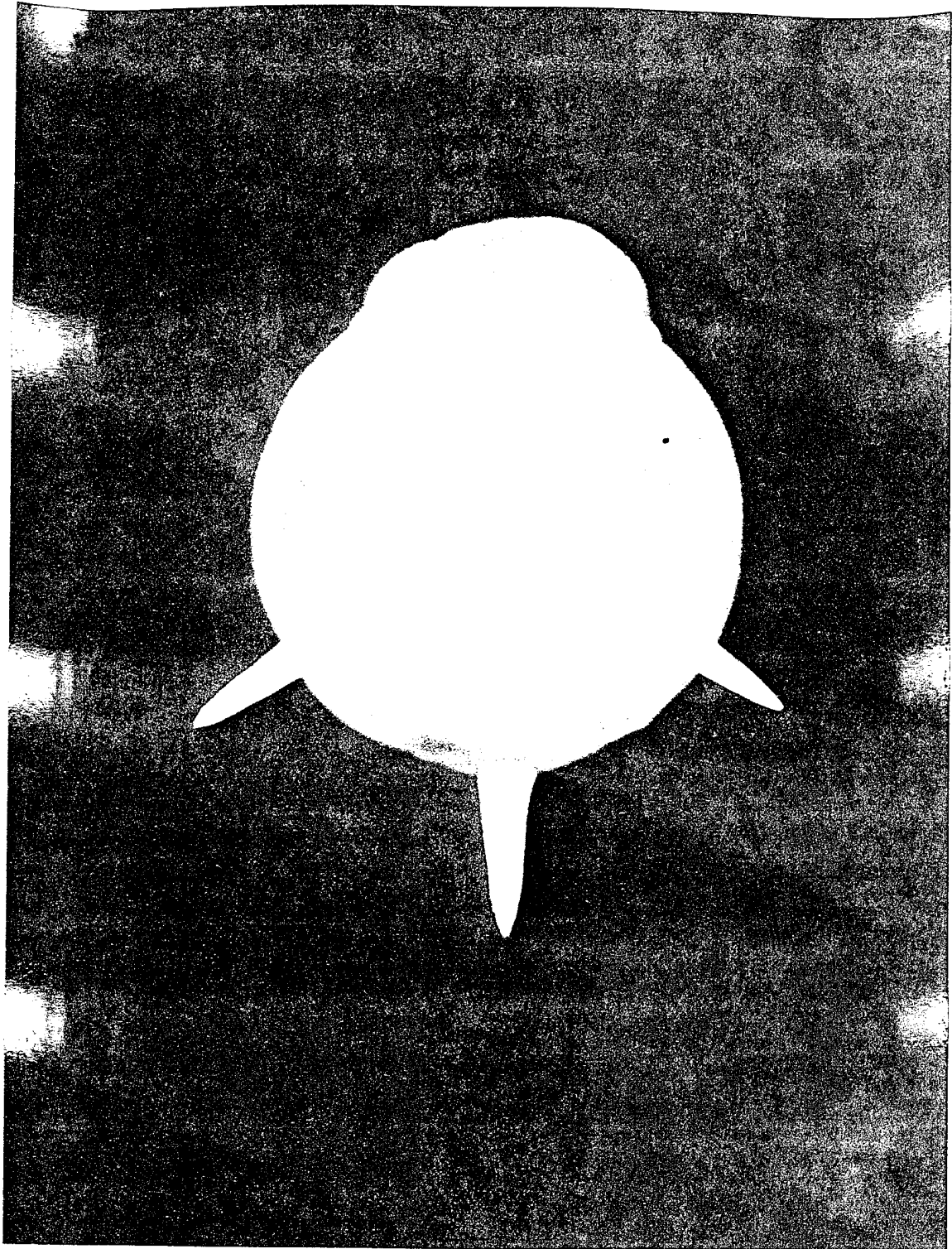
Time: .12 msec



Camera: R-30

Station: F-362 (6 x 6 No. 2)

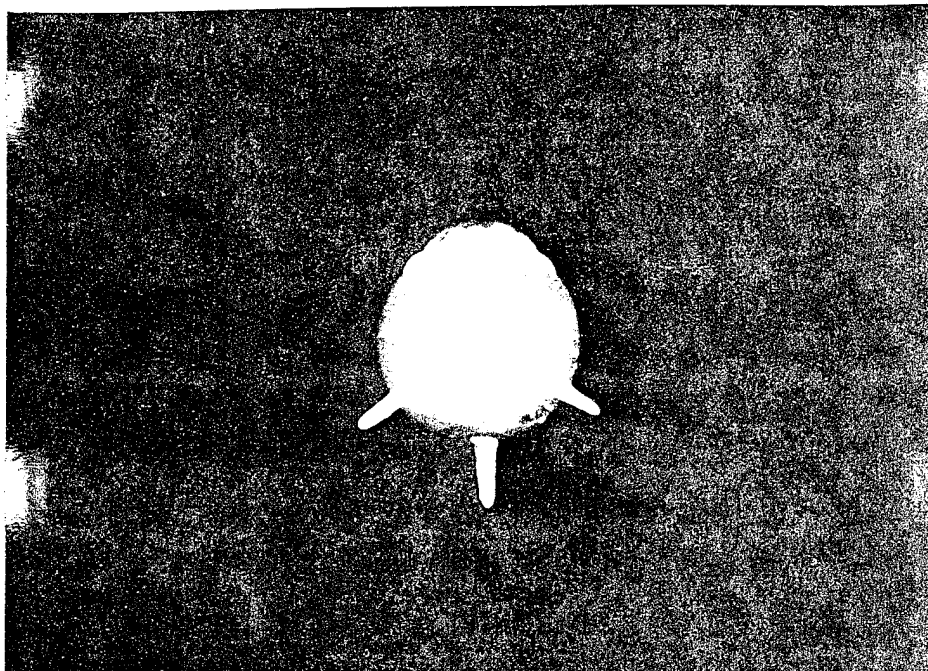
Time: 0.49 msec



Camera: R-34

Station: F-362 (6 x 6 No. 2)

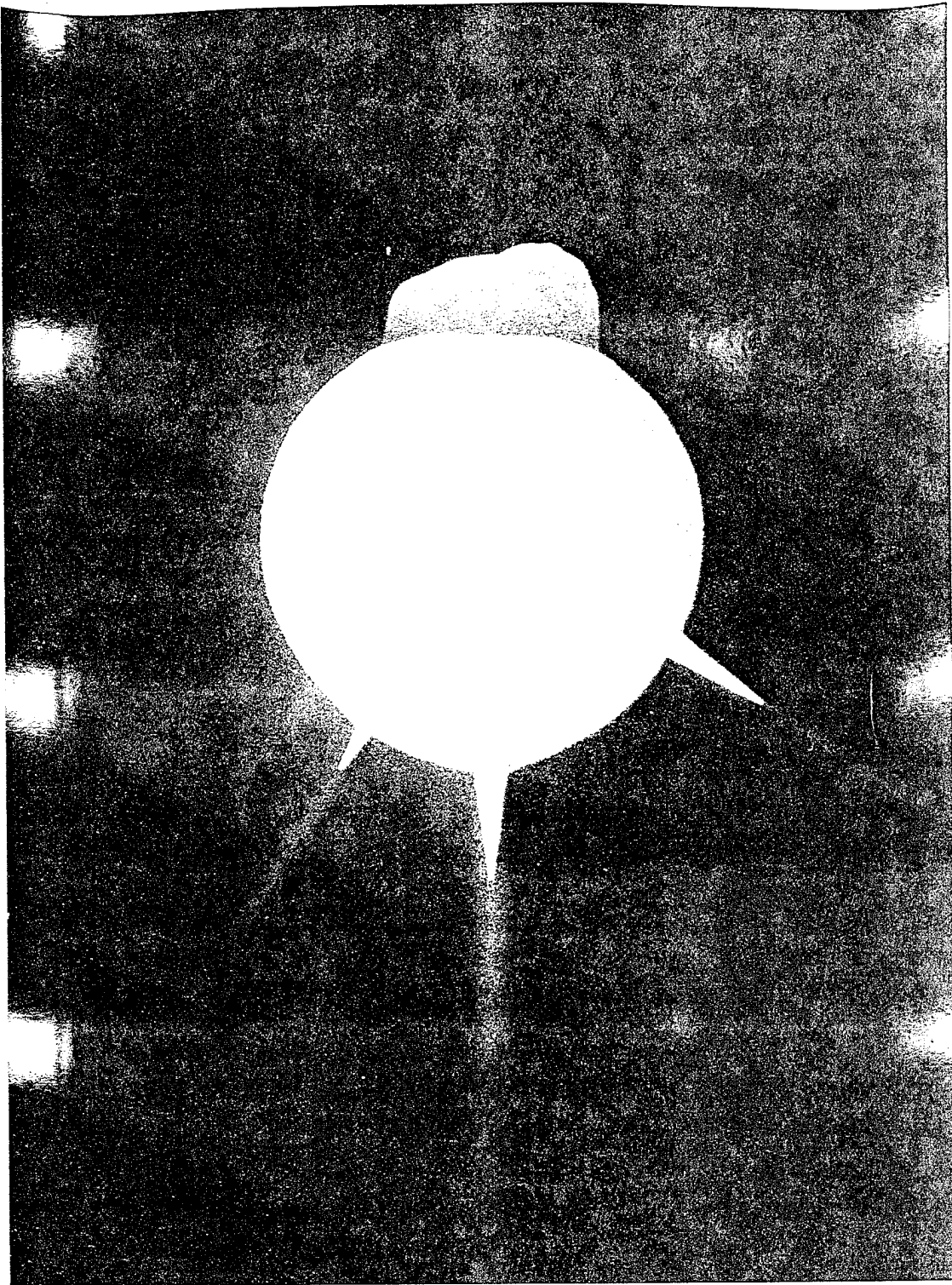
Time: 3.18 msec



Camera: E-34

Station: F-362 (6 x 6 No. 2)

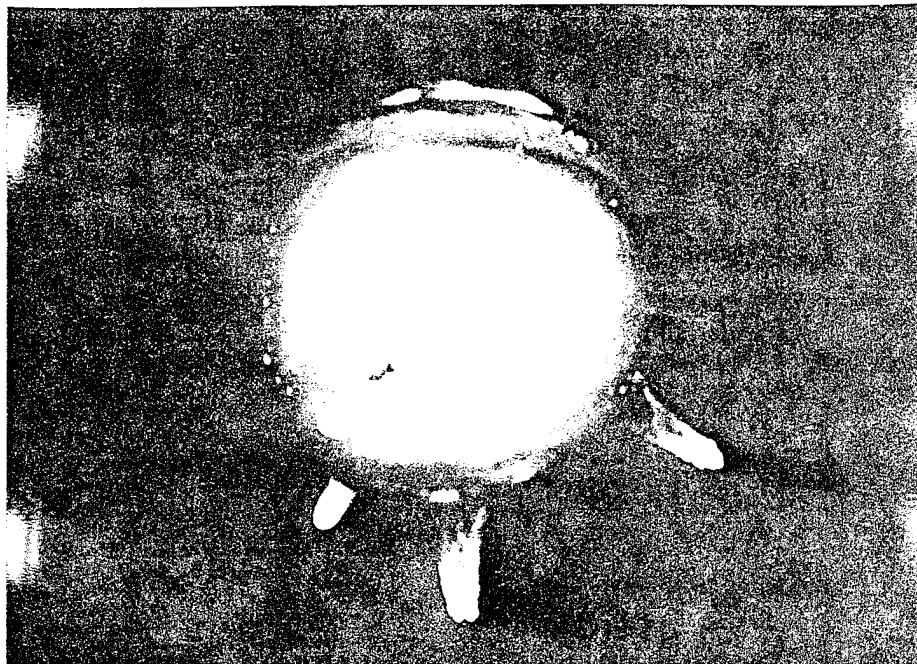
Time: 6.37 msec



Camera: XR-3

Station: F-369 (6 x 6 No. 3)

Time: 1.02 msec



Camera: E-25

Station: F-369 (6 x 6 No. 3)

Time: 10.01 msec

Distribution

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